

ABSTRACT OF THE DISCLOSURE

A device for detecting at least one substance of a fluid includes at least one piezo-acoustic resonator with at least one piezo layer, an electrode arranged on the piezo-electric layer, at least one other electrode arranged on the piezo-electric layer and a surface section used for sorption of the substance of the fluid. The piezo-electric layer, the electrodes and the surface section are disposed in such a way that electric control of the electrodes leads to an oscillation of the resonator at a resonance frequency which depends upon the amount of the substance which is sorbed on the surface section. The thickness of the piezoelectric layer is in the region of 0.5 to 20  $\mu\text{m}$  and the resonance frequency of the oscillation ranges from 500 MHz to 2 GHz. The device is a mass sensor with a piezo-acoustic high-frequency thin film resonator.